Trend Study 27R-8-98

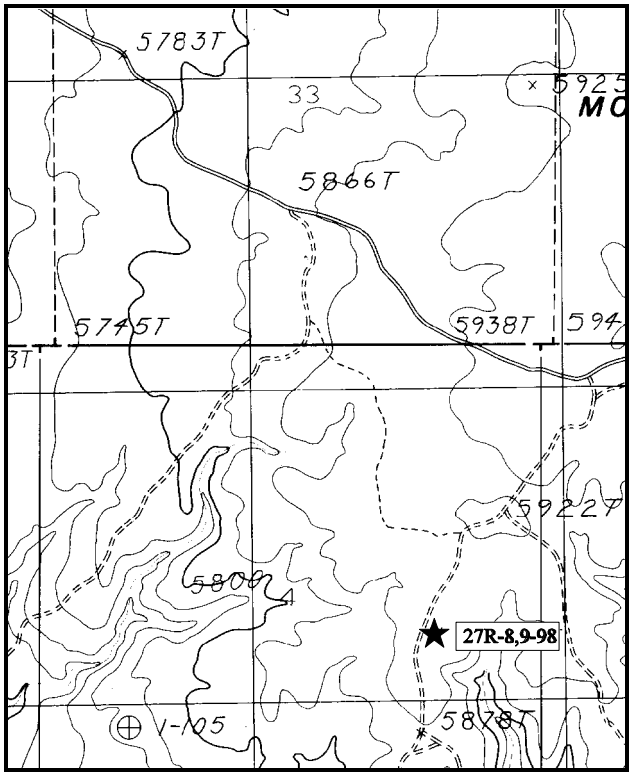
Study site name: Five Mile Mountain Outside . Range type: Burned Sagebrush/Annual Weed

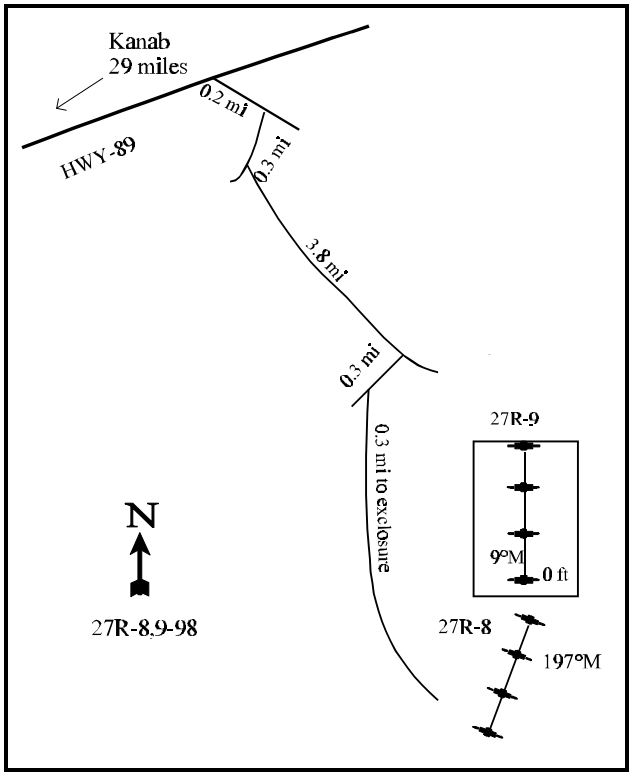
Compass bearing: frequency baseline 197°M degrees.

Footmark (first frame placement) 5 feet. Frequency belt placement; line 1 (11ft & 95ft), line 2 (59ft), line 3 (34ft & 71 ft).

LOCATION DESCRIPTION

From the 90° turn on HWY-89 in Kanab, travel 29 miles on south-89 (traveling east from Kanab) to the Five-mile Mountain turnoff. Turn right and go approximately 0.2 miles to a fork. Stay right at the fork and continue 0.3 miles to another fork. Go left for 3.8 miles to another fork. At the fork, go right for 0.3 miles to the next fork. From here, go right for 0.3 miles to the exclosure on the left. The 0 foot stake of the baseline is located on the south side of the exclosure and can be located by counting down 5 red posts from the SW corner of the exclosure. Browse tag #473 is attached to the 0 foot stake.





Map Name: Pine Hollow Canyon Diagrammatic Sketch

Township 43S , Range 2W , Section 4 UTM 4106245.732 N, 409584.807 E

DISCUSSION

Trend Study No. 27R-8

This is a new trend study located adjacent to the Five Mile Mountain Exclosure. It is a two-way exclosure (livestock exclosure and outside) with this study sampling the outside portion. A data summary for the livestock exclosure is found in the next study discussion (no. 27R-9). The area is almost level with a south, southeast aspect and an elevation of about 5,900 feet. It supports a black sagebrush-grass range type with scattered juniper trees. A fire has burned some of the area 3 to 4 years ago and eliminated most of the sagebrush in the burned areas. The site is located on the south slope of Five Mile Mountain, a low plateau south of Highway 89. It gets most big game use in severe winters when deer drop down off the Vermillion Cliffs. Pellet group data from outside of the exclosure estimate 20 deer and 12 cow days use/acre.

Soil at the site is shallow and rocky with a hard pan encountered at almost 9 inches in depth. Texture is a loam with a neutral pH (7.2). Both phosphorus and potassium appear to be limiting to plant development at just 8.2 ppm and 57.6 ppm respectively. Values below 10 ppm for phosphorus and 70 ppm for potassium are considered deficient. Rock and especially pavement are abundant on the soil surface. The profile is also quite rocky. Due to the rock content, average soil temperature is extremely high at 91°F at an average depth of just over 9 inches. This condition causes rapid soil drying and creates a harsh environment for sagebrush seedlings to become establish. It also gives winter annuals like cheatgrass and storksbill a competitive advantage against cool season perennial grasses and forbs.

The fire was spotty outside of the exclosure, leaving several areas unburned. Burned areas are dominated by broom snakeweed, while unburned spots support moderately dense stands of black sagebrush. The sagebrush has an estimated density of 2,180 plants/acre. Nearly half of the sagebrush exhibit some characteristics of Wyoming big sagebrush indicating possible hybridization between these two species. The population is heavily utilized, however vigor is normal on most plants and percent decadence is relatively low at 19%. Reproduction is poor with few seedlings encountered and young plants accounting for only 6% of the population. Recruitment is currently barely enough to maintain the stand, and unless it improves, the population will likely decline in the future.

Broom snakeweed is currently the most abundant shrub on the site with an estimated density of 2,360 mostly mature plants/acre. It appears that the population has declined considerably over the past few years due to the high number of dead snakeweed shrubs counted (4,280 plants/acre). Reproduction is also poor and a further decline in density is likely in the future.

The herbaceous understory is extremely poor in composition and abundance. Cheatgrass brome, an annual, totally dominates the site by providing 95% of the grass cover. Equally abundant is the annual forb storksbill which accounts for 95% of the forb cover. These two species alone provide 68% of the total vegetation cover on the site. Perennial grasses and forbs are rare in their occurrence with all species combined producing less than ½ of 1% cover.

1998 APPARENT TREND ASSESSMENT

Soil conditions are poor. Litter cover is limited, rock and pavement cover are high (38%), leaving 25% of the ground surface as bare ground. Erosion is not a problem however due to the levelness of the terrain. Trend for the key browse species, black sagebrush, is tenuous. The population is mostly mature with poor reproduction and heavy use. Unless recruitment improves, the population will decline. The increaser/invader, broom snakeweed, appears to be in the same situation. Most of the stand is mature, reproduction is poor, and an extremely large number of dead plants were sampled. The herbaceous understory is extremely poor with annuals totally dominating the herbaceous components. Perennial grasses and forbs are rare.

HERBACEOUS TRENDS --
Herd unit 27R, Study no: 8

Type	Species	Nested Frequency '98	Quadrat Frequency '98	Average Cover % '98
G	Bromus tectorum (a)	424	99	8.36
G	Oryzopsis hymenoides	3	1	.03
G	Poa fendleriana	6	2	.01
G	Poa secunda	7	2	.06
G	Sitanion hystrix	3	1	.03
G	Vulpia octoflora (a)	39	15	.32
Total for Annual Grasses		463	114	8.68
Total for Perennial Grasses		19	6	0.13
Total for Grasses		482	120	8.81
F	Draba spp. (a)	102	38	.36
F	Erodium cicutarium (a)	264	67	8.71
F	Lappula occidentalis (a)	3	1	.00
F	Phlox longifolia	12	4	.02
F	Plantago patagonica (a)	1	1	.00
F	Salsola iberica (a)	1	1	.00
F	Sphaeralcea parvifolia	18	8	.04
F	Unknown forb-perennial	5	2	.01
Total for Annual Forbs		371	108	9.09
Total for Perennial Forbs		35	14	0.07
Total for Forbs		406	122	9.17

BROWSE TRENDS --
Herd unit 27R, Study no: 8

Type	Species	Strip Frequency '98	Average Cover % '98
B	Artemisia nova	39	4.56
B	Cercocarpus ledifolius	0	-
B	Chrysothamnus viscidiflorus viscidiflorus	1	-
B	Gutierrezia sarothrae	44	1.92
B	Juniperus osteosperma	1	.71
B	Opuntia spp.	1	.03
B	Ribes spp.	1	-
B	Yucca baccata baccata	0	-
Total for Browse		96	7.22

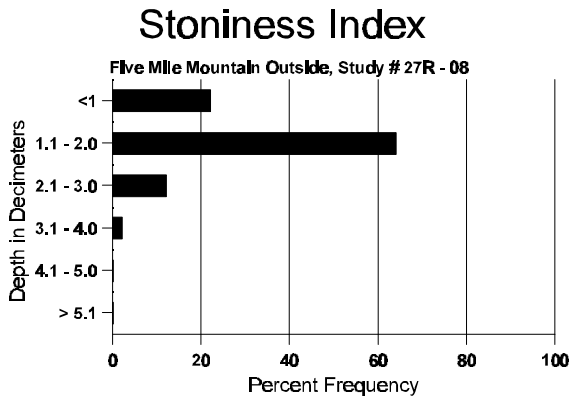
BASIC COVER --

Herd unit 27R, Study no: 8

Cover Type	Nested Frequency '98	Average Cover % '98
Vegetation	447	30.02
Rock	306	12.34
Pavement	454	25.57
Litter	481	32.43
Cryptogams	48	.87
Bare Ground	406	25.17

SOIL ANALYSIS DATA --
Herd Unit 27R, Study # 08, Study Name: Five Mile Mountain Outside

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
8.5	91.0 (9.4)	7.3	50.7	28.7	20.6	1.7	8.23	57.6	.5



PELLET GROUP FREQUENCY --
Herd unit 27R, Study no: 8

Type	Quadrat Frequency '98
Rabbit	29
Deer	24
Cattle	5

BROWSE CHARACTERISTICS --
Herd unit 27R, Study no: 8

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia nova																		
S	98	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	98	3	-	-	-	-	3	-	-	-	6	-	-	-	120			6
M	98	10	12	28	-	-	32	-	-	-	82	-	-	-	1640	11	20	82
D	98	3	16	-	-	-	2	-	-	-	14	-	-	7	420			21
X	98	-	-	-	-	-	-	-	-	-	1	-	-	-	560			28
% Plants Showing '98				Moderate Use 26%			Heavy Use 60%				Poor Vigor 06%					%Change		
Total Plants/Acre (excluding Dead & Seedlings)													'98		2180	Dec:		19%
Cercocarpus ledifolius																		
M	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14	29	0
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%				Poor Vigor 00%					%Change		
Total Plants/Acre (excluding Dead & Seedlings)													'98		0	Dec:		-
Chrysothamnus viscidiflorus viscidiflorus																		
D	98	2	-	-	-	-	-	-	-	-	-	-	-	2	40			2
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%				Poor Vigor 100%					%Change		
Total Plants/Acre (excluding Dead & Seedlings)													'98		40	Dec:		100%
Gutierrezia sarothrae																		
S	98	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	98	91	-	-	-	-	-	-	-	-	91	-	-	-	1820	7	9	91
D	98	27	-	-	-	-	-	-	-	-	16	-	-	11	540			27
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	4280			214
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%				Poor Vigor 09%					%Change		
Total Plants/Acre (excluding Dead & Seedlings)													'98		2360	Dec:		23%
Juniperus osteosperma																		
M	98	-	-	-	-	-	-	-	1	-	1	-	-	-	20	-	-	1
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%				Poor Vigor 00%					%Change		
Total Plants/Acre (excluding Dead & Seedlings)													'98		20	Dec:		-
Opuntia spp.																		
M	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20	6	8	1
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%				Poor Vigor 00%					%Change		
Total Plants/Acre (excluding Dead & Seedlings)													'98		20	Dec:		-
Ribes spp.																		

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
% Plants Showing '98		Moderate Use 00%		Heavy Use 00%			Poor Vigor 00%									%Change		
Total Plants/Acre (excluding Dead & Seedlings)													'98		40	Dec:		-
Yucca baccata baccata																		
M	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	17	20	0
% Plants Showing '98		Moderate Use 00%		Heavy Use 00%			Poor Vigor 00%									%Change		
Total Plants/Acre (excluding Dead & Seedlings)													'98		0	Dec:		-